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## Current Support Brief

### CRUISE MISSILE DEPLOYMENT IN CUBA



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CRUISE MISSILE DEPLOYMENT IN CUBA

25X1B The Soviet surface-to-surface (SS-N-2) cruise missile shown in the Havana parade of 2 January 1962 has been firmly identified as the same missile as the AS-1 KENNEL, initially developed by the USSR for an air-to-surface mission. This missile, which may come under Cuban control in the near future, is a potent weapon that is now available in Cuba in substantially larger numbers than can be accounted for solely on the basis of operational sites identified to date. The locations of the four identified KENNEL sites (three operational launch sites and one provisional site) indicate that they have been positioned to protect the sea approaches to many of the Cuban beaches that are most suitable for large amphibious landings. In addition to the deployed sites on the coast, there are a standby/training site and three facilities at which a large number of [REDACTED] KENNEL missiles have been detected. If the total number of KENNEL missiles [REDACTED] 25X1B [REDACTED] were to be deployed at launch sites along the coast, the number of such sites could be increased from the present 4 to between 15 and 20.

25X1B The KENNEL, although developed in the mid-1950's, is a versatile missile that can be launched from aircraft, from land, and probably from ships against both ships and well-defined land targets. Because of its configuration (see the sketch, Figure 1) and related fuel capacity, the maximum range of this missile fired from a coastal defense site probably does not exceed about 30 to 40 nautical miles (nm). Ships with a speed of 10 knots, carrying a landing force, however, would be within range of these launch sites for about 3 to 4 hours. Armed with a simple, conventional high-explosive warhead, the KENNEL is capable of inflicting extensive damage on a wide variety of targets. For example, if the KENNEL were used against vessels, the damage that it could cause with a warhead of about 2,200 pounds most certainly would exceed that caused by the World War II "Kamikaze." The damage caused by a conventional warhead of this size against land structures would vary in inverse proportion to the strength of the structure. Conventional structures would

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be destroyed by a direct hit, and the damage would be extensive to military structures unless they were heavily reinforced or revetted.

The KENNEL is deployed by the USSR in Cuba for coastal defense purposes, and its first two launch sites (for a diagram of a typical KENNEL launch site, see Figure 2) may have had a limited operational capability by 15 August 1962. Four permanent KENNEL launch sites were established initially near Banes, Santa Cruz del Norte, and Sigüanea on the Isle of Pines (see the map, Figure 3), and a provisional launch site was established near La Sierra. In addition, a standby/training site near Campo Florido, ~~and alternate~~ site at Banes, and a possible training school at Mayari Arriba were established. The observation of KENNEL equipment at an installation near Guerra since 25 November 1962 and the recent observation of KENNEL equipment in a restricted area near Santiago de Cuba suggest that this equipment probably is part of the original KENNEL shipments and that the basic KENNEL deployment program in Cuba, which probably was interrupted on 22 October 1962, has been reinstated.

25X1C All the evidence to date indicates that the USSR still is in control of the operational cruise missile sites. There are indications, however, that the Cubans will be given control of coastal defense cruise missile sites. [REDACTED] reporting on training by Cubans to take over the sites was strengthened by Cuban statements in connection with the Havana parade of 2 January 1963. As the missile was passing in front of the reviewing stand (see the photographs, Figure 4), Cuban television announcers referred to the KENNEL as "a group of coast artillery rockets, a new and powerful weapon of our armed forces."

1. KENNEL Missile Sites

a. Mission

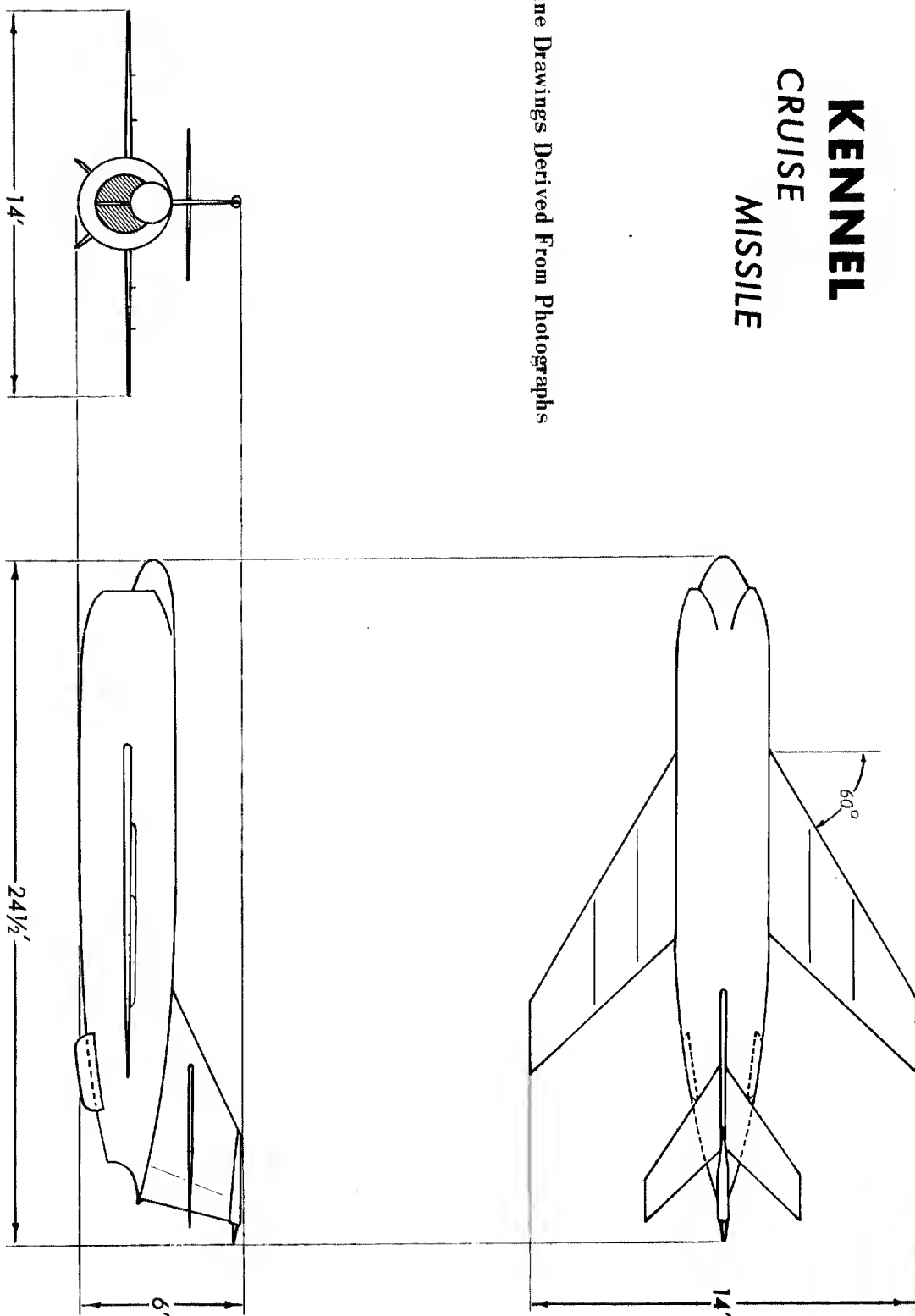
KENNEL sites in Cuba probably are intended to protect the coast against amphibious landings. Although the extensive coastline of Cuba would seem to offer innumerable opportunities for successful landings, such is not the case. On the long northeast coast, for example, between the Peninsula de Hicacos and Gibara, effective landings in force

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# KENNEL CRUISE MISSILE

Line Drawings Derived From Photographs



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Figure 1

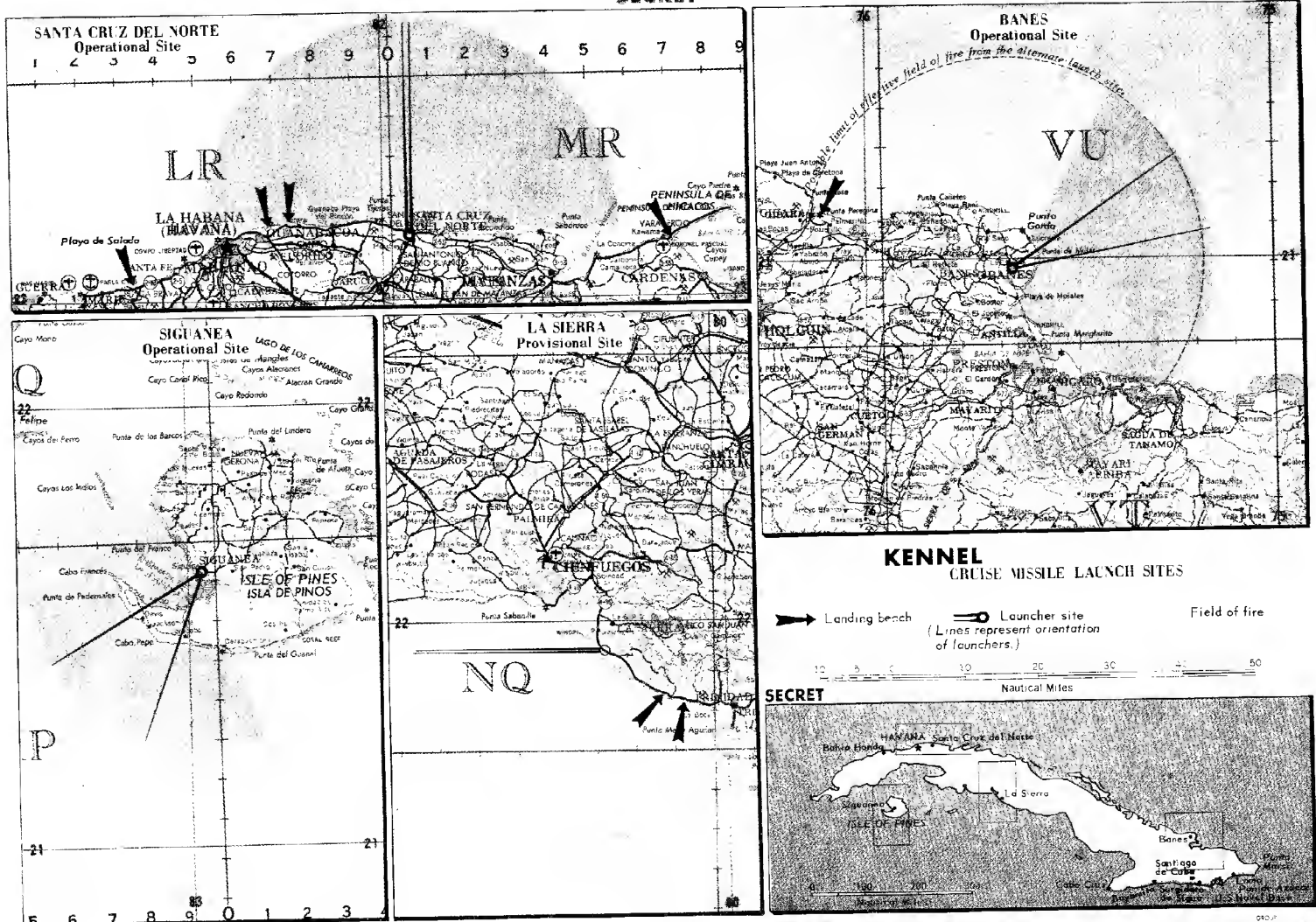
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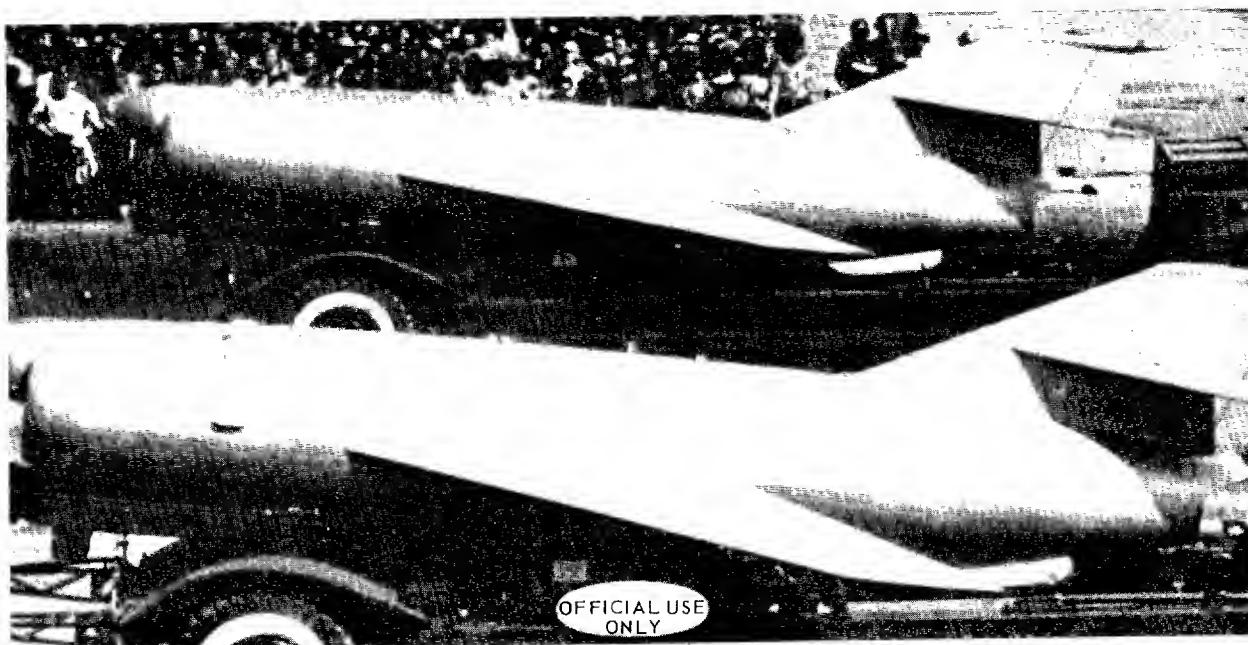


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# KENNEL

## CRUISE MISSILE



TOP: Video photograph of a KENNEL as seen on CMQ-TV coverage of a 2 January 1963 parade in Havana.

CENTER: Two KENNELS pass the reviewing stand in the Havana parade.

BOTTOM: BADGER B medium bomber displaying a pair of KENNELS during a Soviet Navy Day air parade over Leningrad, July 1961.



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are blocked by offshore islands and swampy terrain on the coast proper. Studies indicate that there are about 25 good beaches on the island suitable for amphibious assault, only 9 of which meet US Army doctrinal requirements considered to be minimal in terms of accommodating an amphibious assault force of battalion strength and of requiring a minimum of logistical effort. At the present time, all of the best amphibious assault beaches on the north coast located near significant or predictable targets of anti-Castro forces are covered by permanent or suspected cruise missile sites, with one explainable exception. The only good beaches not covered by cruise missiles are located in areas of difficult coastal terrain with poor access to the major interior arteries of transportation that traverse the long axis of the island. The 16 good beaches along the 200-mile sector of the southeastern coast between Punta Maisi and Cabo Cruz are not defended at this time by cruise missile sites. Their absence in this sector may reflect an over-all island phasing in which this area is the last to be so protected, for recent photography has identified KENNEL equipment in the Santiago de Cuba area. The two remaining good amphibious assault beaches are located on a section of unobstructed coast west of Trinidad and probably within the field of fire of a provisional launch site.

b. Location

The Banes KENNEL launch site at 20°58'N - 75°13'E is located about 5 nm east-northeast of the town of Banes overlooking the best landing beach on the seacoast in the Banes, Preston, and Nicaro area. In addition, this launch site also can protect the Nicaro nickel plant from sea attack. The site is located about 2.5 nm back from the beach at an elevation of 310 feet. At this elevation the organic radar equipment at the site probably could acquire a target 60 feet high at about 32 nm from the site.\* The two launchers at the site are oriented on azimuths of 56

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and 79 degrees, and the sector of fire of the site, as determined by the location of the site and the probable obstruction of the guidance by the surrounding hills, is estimated to be from 30 to 180 degree azimuths from the site. Eight KENNEL [REDACTED] have been observed at the site.

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An alternate launch site was prepared 1.1 nm northeast of the original site between 23 October and 25 November 1962, but as of 23 January 1963 the launch and control equipment remains at the original site. The location and elevation of the alternate site appears to provide better observation of the seacoast to the north, [REDACTED]

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[REDACTED] the site is intended to defend the coast from Punta Gorda to below the entrances to the ports of Preston and Nicaro. On the basis of a study of the terrain, it appears that the optimum field of fire of the alternate site at Banes lies between azimuths of 350 and 160 degrees. The existence of a good landing beach at Gibara, 27 nm from the site, however, suggests that the western azimuth may in fact be as much as 280 degrees. The alternate site permits protection of a larger area than the original site and provides better protection of the SA-2 site about 4 nm west-northwest near Los Angeles.

The Santa Cruz del Norte KENNEL launch site at 23°09'N - 81°56'W is located about 1.4 nm southwest of Santa Cruz del Norte on a bluff, about 0.5 nm inland, overlooking the coastal highway and the sea approaches to the coast between Havana and Matanzas, the section of Cuba closest to Key West. Situated at an elevation of about 230 feet, this site probably will be able to acquire a target vessel 60 feet high at about 29 nm from the site. [REDACTED]

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[REDACTED] the elevation of the site and its position on the coast suggests that it was established to defend the coastline from the Bay of Matanzas to Havana. It is estimated that the field of fire of this site lies between azimuths of 270 and 90 degrees. This field of fire would cover all the good landing beaches on the north coast of the island that have the best access to the interior, but it does not protect a good landing beach at the base of the Peninsula de Hicacos, 39 nm from the Santa Cruz del Norte site. There is, however, only one exit from this beach, and that is over a drawbridge. It appears, therefore, that the equipment at Santa Cruz del Norte was deployed at a location designed to optimize over-all

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coverage of the most suitable beaches. Eight KENNEL [REDACTED] originally were observed at the site, but two additional possible [REDACTED] have been reported since early January 1963.

The Siguatepeque KENNEL launch site on the Isle of Pines at 21°37'N - 82°58'W is located 0.7 nm inland on the highest elevation in the area, overlooking the Bay of Siguatepeque. The only landing beaches on the west coast of the Isle of Pines are located within range of this site. These beaches, however, are not capable of supporting mechanized movements. [REDACTED]

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[REDACTED] the field of fire is estimated to lie between azimuths of 160 and 320 degrees. The elevation of this site is about 130 feet, indicating that the site radar probably could acquire a target vessel 60 feet high about 24 nm from the site. The Siguatepeque KENNEL site probably was established to protect the western sea approaches to the Isle of Pines, as well as the Siguatepeque airport and its nearby SA-2 site. [REDACTED]

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The La Sierra provisional launch site at 21°56'N - 80°19'W is located about 3.5 nm southwest of La Sierra on the coast, about 12 nm to the southeast of the entrance to Cienfuegos harbor. The elevation of the site is about 165 feet, indicating that the site could acquire a target 60 feet high at about 26 nm from the site. [REDACTED]

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[REDACTED] the estimated field of fire lies between azimuths of 140 and 305 degrees. This site probably was established in response to an anticipated threat probably directed at Cienfuegos harbor area or the good landing beaches west of Trinidad, as indicated by the speed with which the site was established and the short time that it was active. It is believed that the KENNEL equipment deployed at La Sierra came from the Campo Florido standby/training site about the first of November and became operational immediately. On about 28 November 1962, before revetment construction could be completed, however, the La Sierra site was vacated, and the equipment reappeared at the Campo Florido site.

The Campo Florido KENNEL standby/training site at 23°06'N - 82°11'W is located about 3.7 nm west-southwest of the town of Campo

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Florida at an elevation of about 150 feet. There is little likelihood that this site was established for launching the KENNEL cruise missiles in the defense of the coast, [REDACTED]

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[REDACTED] In addition, the site is surrounded by a thin screen of high trees along the fence line that would tend to inhibit firing in a seaward direction. This site probably is a standby/training position, as the equipment has not been revetted even though it has been assembled in an operational pattern and interconnected by cables. [REDACTED]

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KENNEL [REDACTED] have been observed at this site. The movement of this equipment to the La Sierra site and its subsequent return support the estimate that Campo Florido is not an operational site. The provision for a mobile or reserve site in the Havana area to protect both the Havana area or the south-central coast against attack and to reinforce existing sites in the event of a major attack on several beaches is typical of Soviet military doctrine. The recent sighting [REDACTED]

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[REDACTED] approximately 2.5 nm north of the present site at Campo Florido near the highest elevation in the area, may indicate an intent to establish an operational site in this area.

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## 2. Related KENNEL Activity

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In addition to the four launch sites discussed above, about 94 KENNEL [REDACTED] have been observed at two locations. One installation is located on the coast and the second in the interior of the island. The equipment at both sites is similar and [REDACTED]

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[REDACTED] of the military unit or units located there and that both installations probably are organized to perform similar functions. The functional similarities between the two sites diverge, however, when the locational factors are examined, particularly with respect to the inland location of the Mayari Arriba installation in eastern Cuba.

The Mayari Arriba military installation at 20°29'N - 75°30'W is housed in facilities identified as a "Drivers Training School" by Cuban authorities. Located about 12 nm south-southeast of Nicaro, 16 nm from the Atlantic coast and about 42 nm from the Guantanamo area, at an elevation of about 2,000 feet, this installation cannot be considered a coastal defense launch

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site. The altitude of the site, however, provides a good advantage for firing against offshore targets if the missile can travel to the required range. About 48 KENNEL [REDACTED] were observed at this site in mid-October 1962 after the withdrawal of most of the vehicles used in driver training. In addition, six large unidentified vehicles, each about 38 feet long, were observed here late in November 1962. On photography of 27 January 1962, 11 of these large vehicles were observed in the area. It is estimated that 48 KENNEL [REDACTED] and 12 large unidentified vehicles are located at Mayari Arriba. This equipment would be sufficient to establish as many as six KENNEL coastal defense sites. The Mayari Arriba installation also may act as a support base or depot for the nearby operational site at Banes.

A possible KENNEL installation has been identified at 23°00'N - 82°50'W, near Guerra on the north coast of Cuba west of the entrance to Mariel harbor. Since 11 January 1962, [REDACTED] have been observed in the headquarters area at this location. In addition, 10 large vehicles, about 38 feet long and similar to the 11 observed at Mayari Arriba, were observed in this area on 25 November 1962. By 16 December 1962, 12 of these vehicles could be counted in the headquarters area. The presence of this equipment suggests that as many as six additional launch sites may be planned in the western end of Cuba. One possible location for a launch site in the Guerra area is at an elevation of about 200 feet. This elevation would provide the site with an effective range of about 27 nm. The field of fire from this position probably would cover a sector between azimuths of 265 and 80 degrees. A KENNEL launch site in this area of the coast would protect the sector from Havana to Bahia Honda and the only good landing beach on the north coast of Cuba west of Havana at Playa de Salado.

Detailed analysis of equipment within a third unidentified fenced installation at 20°04'N - 75°52'W, north-northwest of Santiago de Cuba, has identified 22 probable KENNEL [REDACTED]

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On the basis of the location of the good assault beaches and the surrounding terrain, it is estimated that three KENNEL launch sites located near Loma Pan de Azucar, at 21°03'N - 74°46' W; near Surgidero de Sigua, at 19°53'N - 75°33'W; and near Bayamita, at 19°58'N - 76°11'W would provide coverage of all the good assault beaches between Punta Maisi and Cabo Cruz. Three KENNEL sites in these positions would provide a continuous coverage along the coast and overlapping coverage in the sea approaches to Guantanamo Bay and the Santiago de Cuba Bay.

25X1B The total number of KENNEL [REDACTED] reported in Cuba 25X1B exceeds the number required by the deployed coastal defense sites identified to date. The presence of at least 115 KENNEL [REDACTED] implies the planned deployment of additional coastal defense sites, an exceedingly well-stocked missile supply system, or an alternate use. If the use of the KENNEL against land targets is planned, the missile probably would require a modification of the guidance system or a forward observer. 25X1B That the system can be modified for use against land targets is indicated by the observation late in July 1962 of KENNEL [REDACTED] 25X1B [REDACTED] in transit in East Germany with a probable Tactical Air Force unit. It is believed that such units are operational in the Soviet Army at the present time. The deployment of new sites in the area surrounding Guantanamo, but not for the protection of the coastline, would be a clear indication of the presence of KENNEL missiles modified for use against land targets.

Most of the KENNEL missiles that have not yet been deployed are located in installations which might be supply centers used in support of the coastal defense sites. The geographic location of Guerra and Mayari Arriba tends to support the supply center concept for these two installations, but the concentration of missiles at each location probably is in excess of the supply requirements of the coastal defense sites deployed in that section of the island. The number of new coastal defense positions that the Cubans might wish to deploy would depend primarily on the level of defense which they might wish to achieve. There are still many small unprotected beaches in Cuba permitting limited amphibious assault operations. It would be impossible to attempt to protect each small beach individually, but over-all protection of the coast probably could be achieved through the judicious deployment of the equipment observed to date.

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3. Characteristics of the KENNEL Missile

The KENNEL first was observed by German scientists working in the USSR in 1951 and by Western attachés at the Leningrad Naval Air Show on 30 July 1961 as an air-to-surface system (see Figure 4). The appearance of the missile in a surface-to-surface role and fired from a fixed launch site is an indication of the versatility of the system and of the Soviet principle of using a developed weapon to the fullest extent. The KENNEL has been described as a "small MIG." [REDACTED]

[REDACTED] the over-all length to be 24.5 feet and the wingspan to be 14 feet. Propulsion is turbojet. The maximum range in an air-to-surface mission is estimated to be 55 nm,\* with speed from Mach 0.8 to 0.9. The weight of the warhead that could be carried is estimated to be 3,000 pounds. Guidance is by a beam-riding radar with semiactive homing against ships and well-defined land targets. Detailed pictorial information is available for only the surface-to-surface coastal defense model, and the precise differences between the various models of the KENNEL have not been firmly established to date. The surface-to-surface coastal defense KENNEL, however, may have a smaller radome on a larger vertical stabilizer than the air-to-surface model, but the evidence is not conclusive.

\* This range exceeds the 30 to 40 nm range of the missile in a surface-to-surface mission because of the altitude and velocity of the carrying aircraft at launch.

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Analyst:

25X1A

Coord:

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